Ferrario Ford ROUSH Liquid Propane Injection Orientation

For New Hampshire tax-exempt Agencies
updated 4/4/09

FERRARIO AUTO TEAM
ELMIRA • TOWANDA

ROUSH F-150 LIQUID PROPANE INJECTION

Agenda

- **Why Propane?**
  - ✓ Domestic Fuel Supply
  - ✓ Reduced Exhaust Emissions
  - ✓ Fuel Availability
  - ✓ Federal Fuel Incentives

- **ROUSH Liquid Propane Injection**
  - ✓ Company Background
  - ✓ Product Development
  - ✓ Vehicle Performance
  - ✓ Reliable and Safe
  - ✓ Model Availability and Timing

- **Cost Comparison**
  - ✓ Product Cost
  - ✓ Federal Grants
  - ✓ Fuel Commodity Prices
  - ✓ Operating Cost Comparison

- **Summary**

- **Vehicle Demonstration**

What is Propane?

Natural gas is our must abundant US native fuel

Natural Gas + refinery = Propane

65% of propane is sourced from domestic natural gas
25% of propane is sourced from domestic oil
90% of propane sourced from US natural gas or oil

7% of propane sourced from Canadian natural gas or oil
97% US and Canadian sources

Propane industry has ample capacity for growth

Reduced Exhaust Emissions

18% less Greenhouse Gas Emissions

20% less Nitrous Oxide

60% less Carbon Monoxide

Reduced Particulate Emissions

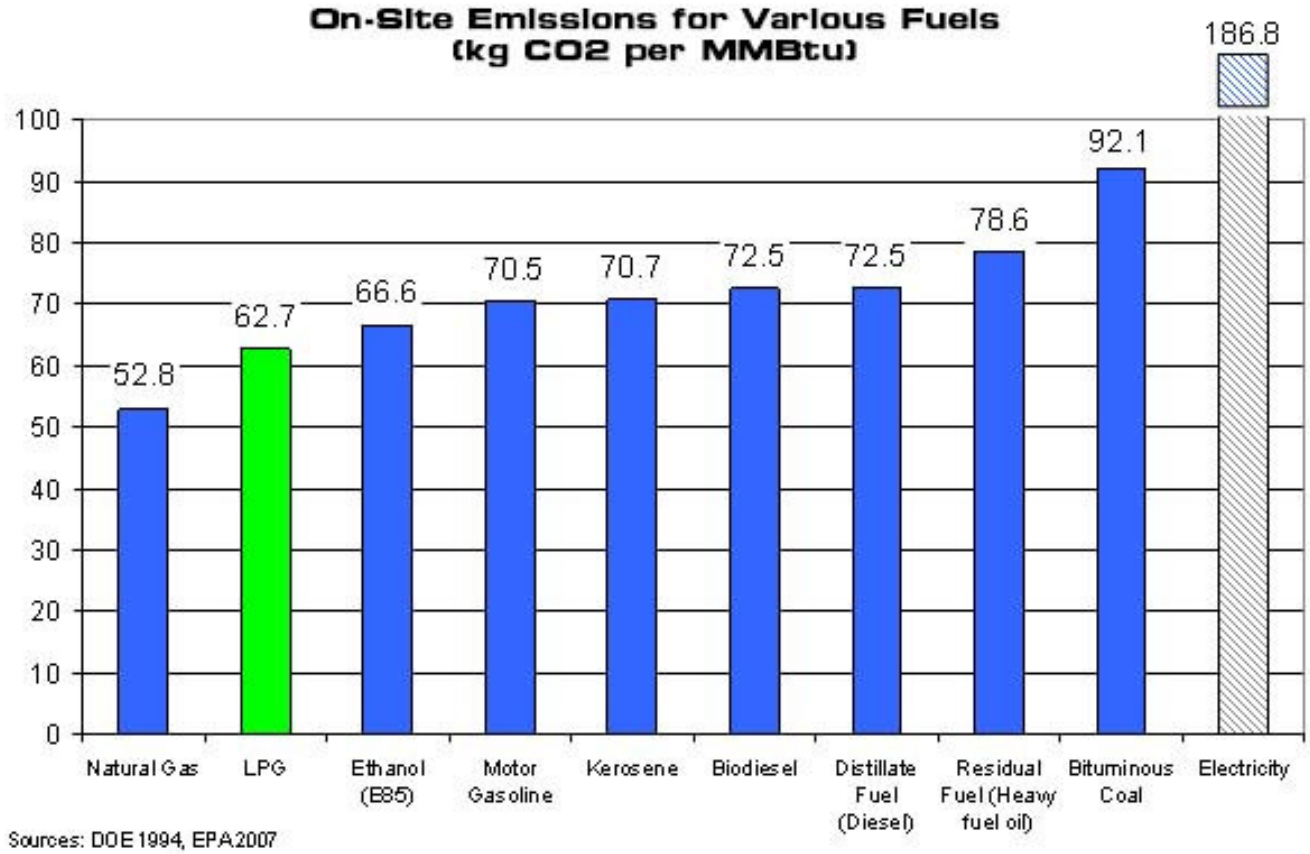
Elimination of Benzene and Tuolene

No evaporative emissions

Carbon dioxide released per Btu	
Fuel Type	**kg CO_2/ million Btu**
Natural Gas	52.8
LPG	62.7
Ethanol (E85)	66.6
Motor Gasoline	70.5
Kerosene	70.7
Distillate Fuel (Diesel)	72.5
Residual Fuel (Heavy fuel oil)	78.6
Bituminous Coal	92.7

On-site emissions estimates based on chemical composition of the fuel with 99 percent combustion.

Source: U.S. Department of Energy (DOE). 1994. DOE/PO-00280 Vol. 2 (October).



Sources: DOE 1994, EPA2007

Propane Fuel Availability

Your own dispensing equipment

Infrastructure is relatively inexpensive

Typical cost $10,000 for 1,000 gallon private facility

Propane available at over 2,500 public locations in US

- More availability than biodiesel
- More availability than natural gas
- More availability than E85 (in most areas)

Why not already in common use?

Previous light vehicle systems use propane in VAPOR form.

- Vapor Systems do not start easily when cold.
  ROUSH technology eliminates this problem.

- Vapor systems are not driver-friendly.
  ROUSH technology eliminates this problem.

- Vapor systems are unreliable.
  ROUSH technology eliminates this problem.

- No Vapor system has received CARB certification.
  ROUSH technology eliminates this problem.

SOLUTION = ROUSH


ROUSH
ASIA
NORTH
EUROPE
• Privately held
• Founded in 1976
• Over 2,500 employees worldwide
• Primary activities: Engineering, Manufacturing,
Motorsports and Aftermarket Performance Products

ROUSH MOTORSPORTS

"Racing is the linchpin that gives our world order."

- Jack Roush

ROUSH FENWAY RACING

NASCAR NexTel Cup Series- 5 Teams

NASCAR Busch Series - 5 Teams

NASCAR Craftsman Truck Series - 3 Teams


ROUSH
PROPANE
ROUSH F-150

LIQUID Propane Injection

- Starts easily at any temperature
  Both cold and hot weather starting tests verified

- NO driver interaction
  Once driver is shown how to start vehicle, no other training

- No change in vehicle reliability versus original Ford
  ROUSH technology retains original Ford computer system

- EPA and CARB certification
  Done or in progress, depending on model

Capabilities

•The ROUSH LPI package with the in-bed tank has a range of over 400 to 500 miles per tank depending on model.

• Propane fuel has 20% less BTU than gasoline.
• Efficient ROUSH design yields 10%-13% less miles per gallon.

•Produces the same power as gasoline:
- Horsepower unchanged
- Torque unchanged
- Towing capacity unchanged

The Simplified Solution

- Fuel Injectors
- Fuel Rail Assembly
- Fuel Tank and pump Assembly
- Fuel Lines
- Air Cleaner
- Wiring
- ROUSH PCM Programming

Complete integration with Ford vehicle systems.

Safety

- **NHTSA Crash testing analysis**
  Roush one of very few companies qualified
  No other propane conversion has received analysis

- **National Fire Protection Association**
  Complies with NFPA 58 Guidelines

ROUSH LPI Service

- ROUSH components 3 year / 36,000 mile warranty
- Original Ford warranty on remainder of vehicle is unaffected
- Diagnosis using Ford diagnostic tools, at any Ford Dealership
- Easy repair/replacement
- All warranty issues/questions processed directly through ROUSH

ROUSH LPI Models

- 2007.5 – 2008 F-150

- available today
- 5.4L engine
- in-bed tank, 500 mile range
- under-bed tank, 250 mile range

- 2009-2010 model expected early 2010 calendar year

ROUSH LPI Models

- 2009-2010 F-250/F-350

- 5.4L engine
- available to order today
- delivery begins August, 2009
- in-bed tank, 450 mile range
- under-bed tank, 250 mile range

ROUSH LPI Models

- 2009-2011 E-150/E-250 Econoline

- 4.6L engine
- Cargo and passenger models
- delivery estimated Fall 2009
- under-bed tank, 250 mile range

Conversion Cost

	drop ship 1-way delivery	existing vehicles 2-way ship/deliver
2007.5 – 2008 F-150	**$9,700**	**$10,000**
2009-2010 F-250/F-350	**$8,700**	**$9,000**
2009-2011 E-150/E-250 Econoline	**$8,700**	**$9,000**

- Prices for tax-exempt purchasers in NH
- Reflects current Federal Tax Incentives to Ferrario
- 2007-2008 F-150 under-body tank is higher cost
- Possible expiration of tax incentives after 12/31/09 may affect price

Department of Energy Grant

100% of incremental cost
(original price of vehicle counts toward your 50% share)

ZERO net cost to for propane upfit

Project size $5M to $15M (600 to 1,700 vehicles)

Municipalities and businesses within state can be sub-grants

Application deadline 5/31/2009

Propane Federal Subsidy

Federal Refund 50 cents per gallon
when propane as a Motor Vehicle Fuel.

Subsidy goes to “he who puts fuel in the vehicle”

Available to all users – including tax exempt Agencies

Current Fuel Cost

New Hampshire State contract 4/1/2009

– Regular gasoline	$1.75/gal
– Diesel	$2.05
– Bulk propane $.88 – 0.50	**$0.38**

NH State Contract propane .80 to .95 depending on location.

Propane industry production to greatly increase in 18-24 months, as Marcellus Shale production comes online.

Expect further reduction in propane fuel cost.

Historical fuel cost

NH State Contract - June 2008 peak prices:

- Regular gasoline $3.49
- Diesel $4.01

- Bulk propane $2.08, less .50 = $1.58

source: http://tonto.eia.doe.gov/dnav/pet/pet_pri_spt_s1_d.htm
plus NH State Contract margins

Operating Cost Comparison

Ford F-150 Supercab 4x4

	Gasoline 65% imported	Propane 3% imported
Annual mileage	20,000	20,000
Average mpg	16	14
Gallons used	1,250	1,429
Current prices:		
Price per gallon	$1.75	$0.38
Annual fuel cost	$2,138	$543
Savings with propane		***(1,595 = 75%)***
Summer 2008:		
Price per gallon	$3.49	$1.58
Annual fuel cost	$4,363	$2,258
Savings with propane		***(2,105)***

Operating Cost Comparison

Ford F-250. Typical mileage with gasoline, 13mpg.
10-15% reduction with propane.
Typical mileage with Ford 6.4L diesel, 12mpg.

	Gasoline 65% imported	Diesel 65% imported	Propane 3% imported
Annual mileage	20,000	20,000	20,000
Average mpg	14	12	12.2
Gallons used	1,429	1,667	1,639
Current prices:			
Price per gallon	$1.75	$2.05	$0.38
Annual fuel cost	$2,501	$3,417	$623
Savings versus gasoline			***(1,878 = 75%)***
Savings versus diesel			***(2,794 = 82%)***
Summer 2008:			
Price per gallon	$3.49	$4.01	$1.58
Annual fuel cost	$4,987	$6,685	$2,590
Savings versus gasoline			***(2,397)***
Savings versus diesel			***(4,095)***

Operating Cost Comparison

Mid-size Car versus ROUSH Propane F-150 4wd

	Mid-size Car gasoline 65% imported	ROUSH F-150 4wd Propane 3% imported
Annual mileage	20,000	20,000
Average mpg	22	14
Gallons used	909	1,429
Current prices:		
Price per gallon	$ 1.75	$0.38
Annual fuel cost	$1,591	$543
Savings with propane		***(1,048 = 66%)***

Even at today's low gasoline price , a ROUSH F-150 with 4wd

operating cost 66% less than midsize car,

which burns gasoline, 65% non-US sourced.

1,000 ROUSH Propane vehicles
Total Benefits

100,000 miles during life cycle of vehicle
Average 13 mpg gasoline
Gasoline not used: 100,000 x 1,000 / 13

7.7 MILLION gallons of gasoline not used
At 65% imported =
5 MILLION gallons not imported

BENEFIT = ENERGY INDEPENDENCE

1,000 ROUSH Propane vehicles
Total Benefits

Estimate future price of fuel
average current cost + July 1, 2008

Gasoline average (1.75 + 3.49) / 2 = $2.62 / gallon
7.7M gallons of gasoline at $2.62 = $20.17M gasoline fuel cost

Propane average (0.38 + 1.58) / 2 = $0.98 / gallon
8.7M gallons of propane at $0.98 = $8.53M propane fuel cost

Net fuel cost savings = $11.64M

BENEFIT = COST SAVINGS FOR TAXPAYERS

Immediate Actions

➢Convert existing vehicles immediately

- 2007.5-2008 F-150 with 5.4L engine
- 2009 F-250/F-350 with 5.4L engine
- 2009 E-150/E-250 with 4.6L engine

➢Plan for future vehicle purchases

- 2009-2010 F-250/F-350 begin fall 2009
- 2009-2010 Econoline cargo/passenger, begin late 2009
- 2010 F-150 begin early 2010

➢Apply for Federal Grant

- prioritize propane
- include future vehicle plans
- include infrastructure
- include municipalities and fleets

➢Publish Request for quotation

- fixed price through 2010 calendar year

Questions & Answers
Vehicle Demonstration

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